



# HAMATEUR CHATTER



The Milwaukee Radio Amateurs Club

December 2012 Volume 20, Issue 12

One of the World's Oldest Continuously Active Radio Amateur Clubs—since 1917

## White Christmas

I'm dreaming of a white Christmas  
Just like Milwaukee used to know  
When the streets were icy  
And walks were dicey  
And dog poop lay beneath the snow

I'm dreaming of a white Christmas  
Like on the Christmas cards I write  
But our days are balmy and bright  
And there's not a flake of snow in sight.

## Joy to the World

Joy to the world  
The winter's come  
And not a trace of snow!  
Let every day  
Be just like in LA!  
No wintry snowstorm's roar!  
No slush upon the floor!  
It's heaven, it's heaven!  
For all but Al Gore.

## FCC Formally Proposes LF Amateur Band



The FCC has issued a Notice of Proposed Rule Making (ET-Docket 12-338) which, among many other things, formally proposes a secondary amateur allocation at 135.7-137.8 kHz. The 130-page notice, whose broad purpose is to implement the decisions of the 2007 World Radio communication Conference (WRC-07), also proposed granting primary status to amateur radio on the 1900-2000 kHz segment of the 160-meter band. That segment is currently shared with radiolocation systems.

(The 1800-1900 kHz band segment is already allocated exclusively to the Amateur Service.)

The only current U.S. users of the spectrum segment including the proposed 135.7-137.8 kHz band are power companies operating PLC (power line carrier) systems for monitoring electrical infrastructure. Broadband over Power Lines (BPL) is a form of PLC, but the systems at these frequencies are used internally by the power companies. Ironically, if the amateur allocation is approved here, the FCC says it is likely that hams will have to coordinate with utilities and avoid causing interference to the PLC systems.

Comments on ET Docket 12-338 are due 60 days after publication in the *Federal Register*, with reply comments due 30 days later. As of this posting, the NPRM had not yet been published in the *Register*.

## Directors' Meeting Minutes

Board of directors meeting called to order at 7:06 pm by Dave Shank, KA9WXN incoming club president.

Director's present: Mark, AB9CD, Michael KC9CMT, Dave KA9WXN, Hal, KB9OZN, Joe, N9UX, Al, KC9IJJ.

Absent: Dan, K9ASA.

Preliminary discussions:

The Board of Director's minutes were accepted as published in the November Chatter by a motion forwarded by Hal, KV9OZN, seconded by AL, KC9IJJ. The Treasurers report was given by Joe, N9UX. The only expenses from October were for the Ozaukee County Historical Society.



## MRAC Officers:

### Terms Expiring in 2014

- President – Dave, KA9WXN
- V-President– Dan, N9ASA
- Secretary – Mike, KC9CMT
- Treasurer – Joe, N9UX
- Director – Mark, AB9CD

### Terms Expiring in 2013

- Director – Al, KC9IJJ
- Director – Hal, KB9OZN

The Club Phone Number  
is: (414) 332-MRAC or

(414) 332- 6 7 2 2

Visit our website at:

[www.w9rh.org](http://www.w9rh.org)

Mail correspondence to:

**M. R. A. C.**

**P.O. Box 240545**

**Milwaukee, WI 53223**



A letter has been drafted by Joe, N9UX to send to ARRL for the Spectrum Defense Fund; the club voted to send \$200 to this fund at the last meeting of the membership. A motion was made to approve the treasurers report as read by AL, KC9IJJ, and seconded by Michael, KC9CMT.

**Meeting programs:** November will be Jeff, K9VS on Telescopes. No Meeting in December. January will be Gary, W9XT on the Arduino prototyping board. February's meeting will be a post Hamfest food gathering. Marche's meeting program is still open at this time. April will be the Annual Election of club director's. May will be the club auction. APRS & PSK31 have been mentioned as a program for April's meeting. Field day falls after the membership meeting in June this year. June's meeting will be about setting up a computer sound card to access PSK31 programs.

**Election Nomination Committee:** The club president will be asking for volunteers at the next membership meeting to take part in the searching for candidates for the upcoming election in April of 2013.

**DSL & Phone:** The club is looking into changes to the phone and DSL service at the repeater community site. More information will be available once arrangements are finalized.

**WAR renewal:** The club has paid to be in the WAR (Wisconsin Association of Repeaters) directory. Dave, KA9WXN has proposed keeping the same contact person. It has been stated that the primary contact should be the person that writes out the check for renewal. Dave, KA9WXN made a motion to keep the primary contact person the same as always, this was seconded by Michael, KC9CMT. The motion passed by a voice vote of 6-0.

**Hamfest:** Fliers will be sent out the first or second week of December along with complimentary tickets to drum up vendor business and increase advance table sales. The ticket color will be orange this year. Dave, KA9WXN will handle coffee and condiments. Dave, KA9WXM will be providing a revised floor plan. We will be numbering the tables this year. Friday will be the set up day. Talk in will be by K9PSN on 145.390, 600 Hz minus offset. Dave will also be handling the Hamfest signs along the roadway, on the building etc...

**Club PR & Recruitment:** The west wall of the WARAC Hamfest facility will be taken up by the club's tables. Across from us will be the meet and greet tables.

**Special Projects Committees:** Club radios and equipment should be offered to club members before they are offered to outside sales. A sales bulletin will be put into the December Chatter for the club members to consider. The club BOD needs to establish what reasonable prices should be for these items. Dave, WB9BWP is working on another flier for general distribution at club meetings and events. Reasonable prices will be worked out and announced to the membership.

**Repeater News:** Does the club need to purge hams with extreme views from the repeater. Timeouts have been mentioned as a way to control behavior on our open repeater. The owner of the repeater sets its own standards for conduct, not the FCC. The repeater is not required to provide this service to its members. The MRAC is not a repeater club, but a club with a repeater that does other things as its emphasis. The idea of a letter of non-compliance to club standards has been discussed. Concrete guidelines need to be established before any subjective criticism should be given. The club should have a published policy as to conduct on the repeater.

**Promoting of the 10-10 net:** Dave will be promoting the 10-10 club net at various functions. Promoting this net could bring more people into the club's nets.

A motion was made to adjourn the meeting at 8:48 pm by AL, KC9IJJ seconded by Michael KC9CMT. Meeting adjourned at 8:50 pm. The room was returned to an organized condition as it was when the room was opened.





## Membership Meeting Minutes

The MRAC membership meeting was called to order at 7:03 pm by Dave, KA9WXM, club president. The Mic was passed around for introductions. A sign-in sheet was circulated for the recording of membership information and attendance.

### Tonight's Program:

Tonight's program will be on astronomy by Jeff Annis, K9BS, Amateur Astronomy & Telescope Building. Jeff built an 8" reflecting telescope. He also redesigned a 14" telescope that he brought along to the meeting. He will be discussing different aspects of the hobby of Astronomy. Dobsonian telescopes, with 14.5" mirror weighted 80lbs so it was a two man operation to transport and assemble.

Goal of Telescope redesign project was to make one that was one man transportable and lite weight. Pro/e solid model of telescope on his computer. Deflection of the main imaging mirror is a very important consideration. The mirror sits in the mirror cell. The 14.5" telescope mirror weights about 30 pounds. Total weight of the scope is about 80lbs. Everything about the telescope is about the three point axis. Rocking platform project allows scope to track north star.

What telescope activities are there: General backyard observing, joining a local astronomy club and observing at club events. Then there is Astro photography. Star Parties @ Hobbs observatory near Eau Claire, WI. Tarps are placed over the telescopes during the day to keep the dew and dust off. During the day these parties have technical talks. Green Bank, WV Star Party is an area that is designated by the Federal Government as a radio astronomy zone. This limits interference too the observations. They have a large receiving telescope at Green Bank. With a total of ten scopes in their array. In WI there is the North Woods Observatory, with 16" scopes in use.

Astro photography, Registax-Image Processing software. Software does the image processing for you in you computer. Jeff had some photos of Jupiter and one of its moons, along with Saturn and its changing tilt. Deep sky Digital Photography needs different more expensive cameras. These cameras are fluid cooled. Star maps are available in many places, along within Astronomy Magazine. Very interesting talk.

Dave, KA9WXM called the business meeting to order at 8:48 pm. Motion made by Al, KC9IJJ to accept the membership minutes as published in the HamChatter of November 2012, motion seconded by Dan, N9ASA. Motion carried by a unanimous vote of the membership. Joe, N9UX then gave a treasurers report for the month of October to date. There is over \$18,000 in the club accounts. Renewal forms are ready for the 2013 club year. The FM simplex contest will take place the second weekend of February, the 10th in 2013. The MRAC won the club portion of the contest last year. Motion was made to accept the treasurers report by AL, KC9IJJ, and seconded by Hal, KB9OZN. The motion was carried by the membership through a voice vote.

### Old Business:

Amateur Radio classes are being given through the various clubs in the area. Pancho requested more standby net opera-

tors for the club nets. He has been doing this alone for some time now. The inter-club swapfest will be coming up on February 16th, 2013. Volunteers are being asked for to man this event. Loren, N9DNR has been giving out fliers through out the tri-state area. The club will have a table at the January WAARC Hamfest, along with most of the other clubs in the area. Dave DeFebo, WB9BWP took the Mic to discuss the anniversary of the club. The state of Wisconsin and the city of Milwaukee sent the club proclamations for our anniversary.

### New Business:

Dave, WB9BWP is the club trustee for the repeater. The club needs a set of guidelines drawn up to keep repeater commmentary within the guidelines set by the FCC at the least. Some people are abusing the privilege of using the club repeater. We should have a simple written policy regarding repeater conduct. Why to people become a ham operator? One of our club member was licensed in 1955. Then all there really was, was radio, SWL and Amateur Radio. Stories were exchanged about how clubs members got into Ham radio. The club is looking to sell a TS-430 radio with power supply, along with a Heathkit SP-104. This will be put into the newsletter in December and January. The January meeting will contain a program on the Arduino prototyping board.

There will be a food gathering at Denny's with Pancho and Jerry after the club meeting.

Dave accepted motions to adjourn the meeting at 9:32 pm.

Motion made by Joe, N9UX seconded by Pancho, N9OFA.

Meeting adjourned at 9:34 pm. The room was then policed of trash and returned to an acceptable condition as found before the meeting commenced. A parts raffle will commence immediately after the meeting.

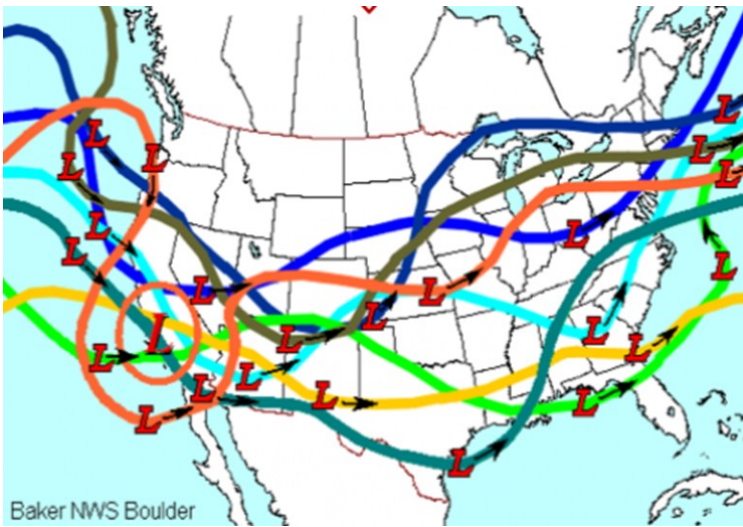




## Severe Weather Preparedness

# 2012-13 Winter

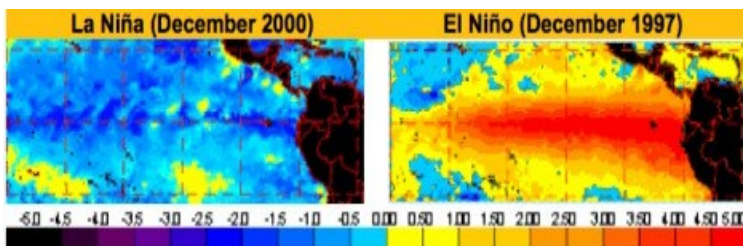
## EL NIÑO WINTER TRACKS



With sea surface temps cooling to near average in much of the equatorial Pacific, [NOAA's Climate Prediction Center](#) has dropped an [El Niño](#) watch that's been in effect for the past several months.

El Niño is part of a cyclical pattern of sea surface temperature variations that affects global weather patterns. The emerging El Niño forecast last spring and summer offered some hope for drought relief in the parched Southwest and the southern tier of states, where warmer than average Pacific Ocean temps can help boost winter and spring precipitation.

During [La Niña](#) years, when cooler-than-average sea surface temperatures prevail in the same region, the storm track often shifts northward, driving storms into the Pacific Northwest and then down across the northern Rockies and northwest Colorado.



Colder than average temps dominate the equatorial Pacific during La Niña (left), with warmer than average temps prevalent during the El Niño phase of the ENSO cycle.

During October, sea surface temperatures continued to reflect border-line **neutral to weak El Niño** conditions and even increased during the second half of the month, but atmospheric circulation — specifically the easterly trade winds — were more in line with ENSO-neutral conditions. “While the tropical ocean and atmosphere may resemble a weak El Niño at times, it is now considered less likely that a fully coupled El Niño will develop,” NOAA experts wrote in a Nov. 8 update. “Therefore, the previous El Niño Watch has been discontinued as the chance of El Niño has decreased. While the development of El Niño, or even La Niña, cannot be ruled out during the next few months,

### ENSO-neutral is now favored through the Northern Hemisphere winter 2012-13.

Moderate to strong phases of El Niño or La Niña help forecasters make seasonal outlooks with more confidence. Without that signal, meteorologists rely on other cyclical ocean characteristics, including the Pacific Decadal Oscillation and the North Atlantic Oscillation. But those signals are less understood and sometimes only manifest impacts a few weeks in advance.

Under neutral Pacific Ocean conditions, the general winter outlook for much of the country is for equal chances of above-average, average, or below average precipitation. At the same time, the Climate Prediction Center is calling for a large area of above average temps across much of the Southwest up through the Rockies and eastward on to the Central Plains.



## Elusive El Niño challenges NOAA's 2012 U.S. Winter Outlook



## Severe Weather Preparedness

October 18, 2012



The western half of the continental U.S. and central and northern Alaska could be in for a warmer-than-average winter, while most of Florida might be colder-than-normal December through February, according to NOAA's annual Winter Outlook announced today from the agency's new Center for Weather and Climate Prediction in College Park, Md. Forecasters with NOAA's Climate Prediction Center say a warring El Niño, expected to have developed by now, makes this year's winter outlook less certain than previous years.

"This is one of the most challenging outlooks we've produced in recent years because El Niño decided not to show up as expected," said Mike Halpert, deputy director of NOAA's Climate Prediction Center. "In fact, it stalled out last month, leaving neutral conditions in place in the tropical Pacific."

When El Niño is present, warmer ocean water in the equatorial Pacific shifts the patterns of tropical rainfall that in turn influence the strength and position of the jetstream and storms over the Pacific Ocean and United States. This climate pattern gives seasonal forecasters' confidence in how the U.S. winter will unfold. An El Niño watch remains in effect because there's still a window for it to emerge.



Other climate factors can influence winter weather across the country. Some of these factors, such as the North Atlantic Oscillation, a prominent climate pattern, are difficult to predict more than one to two weeks in advance. The NAO adds uncertainty to the winter outlook in the Northeast and Mid-Atlantic portions of the country.

Areas ravaged by extreme drought over the past year are unlikely to see much relief from drought conditions this winter.

In the 2012 U.S. Winter Outlook (December through February) odds favor:

Warmer-than-average temperatures in much of Texas, northward through the Central and Northern Plains and westward across the Southwest, the Northern Rockies, and eastern Washington, Oregon and California, as well as the northern two-thirds of Alaska.

Cooler-than-average temperatures in Hawaii and in most of Florida, excluding the panhandle.

Drier-than-average conditions in Hawaii, the Pacific Northwest and Northern California, including Idaho, western Montana, and portions of Wyoming, Utah and most of Nevada. Drier-than-average conditions in the upper Midwest, including Minnesota, Wisconsin, Iowa and northern Missouri and eastern parts of North and South Dakota, Nebraska, Kansas, and western Illinois.

Wetter-than-average conditions across the Gulf Coast states from the northern half of Florida to eastern Texas.

The rest of the country falls into the "equal chance" category, meaning these areas have an equal chance for above-, near-, or below-normal temperatures and/or precipitation.

This seasonal outlook does not project where and when snowstorms may hit or provide total seasonal snowfall accumulations. Snow forecasts are dependent upon the strength and track of winter storms, which are generally not predictable more than a week in advance.

NOAA's National Weather Service is the primary source of weather data, forecasts and warnings for the United States and its territories.

NOAA's National Weather Service operates the most advanced weather and flood warning and forecast system in the world, helping to protect lives and property and enhance the national economy. Working with partners, NOAA's National Weather Service is building a Weather-Ready Nation to support community resilience in the face of increasing vulnerability to extreme weather. NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage our coastal and marine resources.

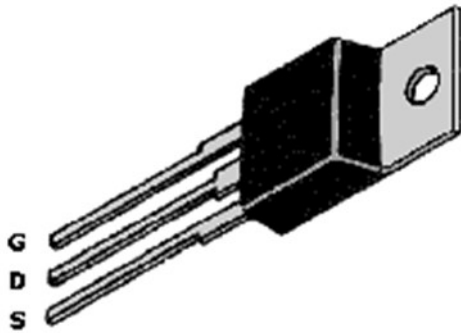




## Testing a MOSFET

*Metal Oxide Semiconductor Field Effect Transistor*

*This testing procedure is for use with a digital multimeter in the diode test-range with a minimum of 3.3 volt over d.u.t. (diode-under-test). If your multi-meter is less than that it will not do the test. Check your meter manual for the specs.*



Connect the 'Source' of the MosFet to the meter's negative (-) lead.

1) Hold the MosFet by the case or the tab but don't touch the metal parts of the test probes with any of the other MosFet's terminals until needed. Do NOT allow a MOSFET to come in contact with your clothes, plastic or plastic products, etc. because of the high static voltages it can generate.

2) First, touch the meter positive lead onto the MosFet's 'Gate'.

3) Now move the positive probe to the 'Drain'. You should get a 'low' reading. The MosFet's internal capacitance on the gate has now been charged up by the meter and the device is 'turned-on'.

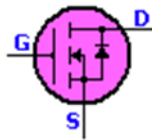
4) With the meter positive still connected to the drain, touch a finger between source and gate (and drain if you like, it does not matter at this stage). The gate will be discharged through your finger and the meter reading should go high, indicating a non-conductive device.

What the test above actually does is testing the cut-off voltage, which is basically the highest voltage put on the gate without making it conduct. Such a simple test is not 100% -- but is useful and usually adequate.

When MOSFETS fail they often go short-circuit drain-to-gate. This can put the drain voltage back onto the gate where of course it feeds (via the gate resistors) into the drive circuitry, possibly blowing that section. It will also get to any other paralleled MosFet gates, blowing them also.

So, if the MosFets are deceased, check the drivers as well! This fact is probably the best reason for adding a source-gate zener diode; zeners fail short circuit and a properly connected zener can limit the damage in a failure! You can also add sub-miniature gate resistors -- which tend to fail open-circuit (like a fuse) under this overload, disconnecting the dud MosFet's gate.

Dying MOSFETS often emit flames or blow-out, even more so in hobby built electronics projects. What that means is that a defective unit can usually be spotted visually. They show a burned hole or 'something black' somewhere. I have seen them a lot especially in ups's which can have as many as 8 or more mosfets in parallel. I always replace all of them if a couple are defective plus the drivers.



**NEVER** use one of those hand held solder-suckers (you know, the ones with a plunger) to desolder a HEX MOSFET. They create enough Electro Static Discharge to destroy a mosfet. Best method is using solder-wick or a professional 'ESD' safe desoldering station.

Below are a couple HexFET applications using an IRF511.

**Fig. 1** is configured as a simple **Class-A Audio Amplifier**. With zero gate bias applied, Q1 is like switch in the off state, so no current flows through the load resistor R2. Ideally speaking, the voltage across Q1 and the load resistor should be equal for class-A operation. A 100K potentiometer (R3) and a 1-MegaOhm fixed resistor (R1) make up a simple adjustable gate-bias circuit. Place a voltmeter between the Drain (D) of Q1 and the circuit ground, and adjust R3 for a meter reading of half the power supply voltage. Almost any resistor value can be used for R2 as long as the maximum current and power ratings of the FET are not exceeded. A resistor value between 22 and 100 ohms is a good choice for experimenting. At high currents, a suitable heat sink should be used.

**Fig. 2** has the power FET setup as a **Relay-Controller**. With zero-gate bias applied, Q1 acts like an open switch, but when a DC voltage greater than 5 volts is applied to the input of the circuit, Q1 turns on, completing the relay circuits and thereby activating the relay coil.

The input bias current required to turn on Q1 and operate the relay is less than 10 uA (microAmps), which is about 1/1,000,000 of the current required to bias the popular 2N3055 power transistor to operate the same relay.

R1 protects whatever's driving the MOSFET and filters against very short transients--together with (mainly) the gate capacitance. The MOSFET doesn't need protection (as long as it never sees more than 12V), as its gate is insulated. For faster switching, use 100 ohm rather than 100K.

R2 is only needed if the circuit driving it doesn't return to ground - to make sure it turns off. For fast OFF times, use as low an impedance as the driving circuit can safely handle.

If driven from a (weak) CMOS gate from the 4K series (e.g. a 4093) as a Vdd of 12V, you could use 1K (or even lower) for R1 - and leave out R2 as the gates output goes to ground anyway.

**Fig. 3** is shown as a regular **Incandescent Lamp Flasher** using two IRF511 HexFets which are configured as a simple astable multivibrator to alternately switch the two lamps, La1 and La2, on and off. The R & C values given set the flash rate to about 1/3 Hz. By varying either the resistor or capacitor values almost any flash rate can be obtained. Increase either C1 and C2, or R1 and R2, and the flash rate slows. Decrease them and the rate increases.

Unlike most semiconductor devices, the power MosFet can be paralleled, without special current-sharing components, to control larger load currents. That can be an important feature when the device is used to turn on incandescent lamps, because the lamp's cold resistance is much lower than the normal operating resistance.

A typical #1815 12 to 14-volt lamp measures 6 ohms cold. When 12 volts is applied, the initial current drawn is 2 amps.



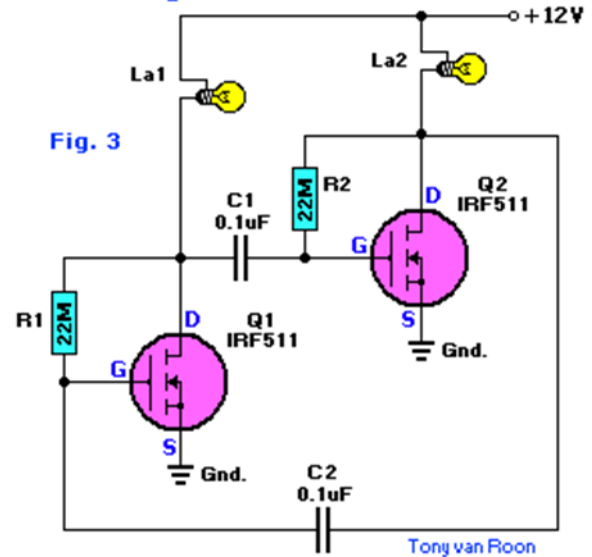
The same lamp, when operating at 12 volts, requires only about 200mA. The hot resistance figures out to be ten times its cold resistance, or 60 ohms. That tidbit should be considered when picking any semiconductor device to control an incandescent lamp.

**Fig. 4** is a **Proximity Switch**. This design takes advantage of the ultra-high input impedance and power-handling capabilities of the IRF511 to make a simple, but sensitive, proximity sensor and alarm driver circuit.

A 3x3-inch piece of circuit board (or similar size metal object), which functions as the pick-up sensor, is connected to the gate of Q1. A 100 Mega Ohm resistor, R2, isolates Q1's gate from R1, allowing the input impedance to remain very high. If a 100-MegaOhm resistor cannot be located, just tie 5 22-MegaOhm resistors in series and use that combination for R2. In fact, R2 can be made even higher in value for added sensitivity.

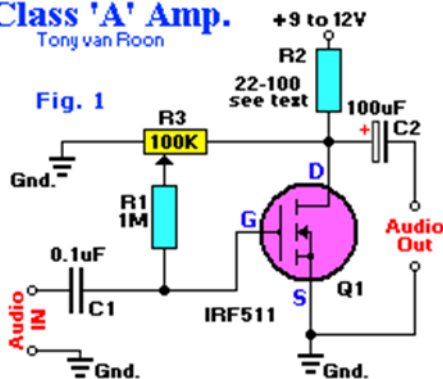
Potentiometer R1 is adjusted to a point where the piezo buzzer just begins to sound off and then carefully backed off to the point where the sound ceases. Experimenting with the setting of R1 will help in obtaining the best sensitivity adjustment for the circuit. Potentiometer R1 may be set to a point where the pick-up must be contacted to set of the alarm sounder. A relay or other current-hungry component can take the place of the piezo sounder to control almost any external circuit.

## "Lamp Flasher"



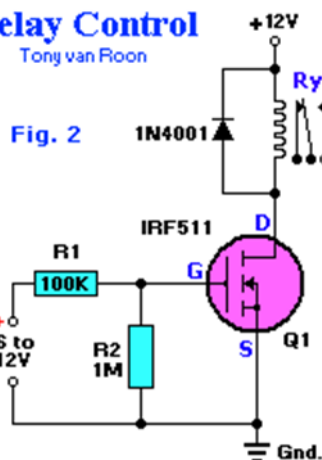
## Class 'A' Amp.

Tony van Roon



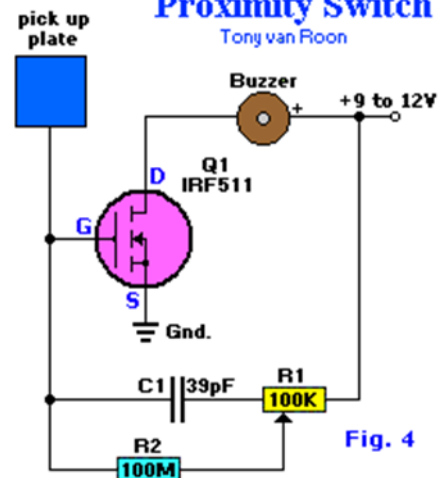
## Relay Control

Tony van Roon



## Proximity Switch

Tony van Roon





## The Experimenters Bench

# Swapfest January 5, 2013

The West Allis Radio Amateur Club 41<sup>st</sup> Annual Midwinter Ham Radio, Computer and Electronics Swapfest will be held on Saturday,

**January 5, 2013**, 8 A.M. to 2 P.M. at the Waukesha County Expo Center Forum, Waukesha, WI.

**Directions:** I-94 west from Milwaukee to County Hwy J (exit 294), south to County Hwy FT, west to the Expo.

**Special Events:** VE session (9-11:15 A.M.) at AMF Waukesha Lanes (across from Expo) and Badger Contester's meeting.

**Costs:** Admission: advance \$4, (5 for \$18 or 10 for \$35 before Dec 20), door \$5. Eight-foot tables only: \$20 before Dec 20, \$24 Dec 20 and after. Electrical outlet \$21 (advance only).

**Registration:** Send advance registration form and #10 business size SASE to WARAC Swapfest, PO Box 1072, Milwaukee, WI 53201.

Advance reservation deadline is December 25, 2012.

**Information:** Phil Gural, W9NAW, 414.425.3649 or visit [www.warac.org](http://www.warac.org)

Start troubleshooting by measuring DC voltages at certain points of the board, and comparing these values to the schematic. So, by knowing the operation of the circuit you start the process of elimination to find the "suspect" component. If there are several "suspects", and this is not a rare occurrence in complex devices, the testing is divided into groups of components. You start checking in reverse soldering order, this means you start with components last soldered, because those are the most sensitive components on the circuit like integrated circuits, transistors, diodes, etc.

The fastest and simplest method to troubleshoot is to use an "ohm-meter."

In most cases you don't have an ohm-meter by itself as it is usually added to an ammeter and voltmeter in one instrument, called AVO meter or multimeter.

The safest and most accurate method is to desolder the component from the board when testing it, because other components could lead to a wrong diagnosis, so you have to be very careful when testing in-circuit.

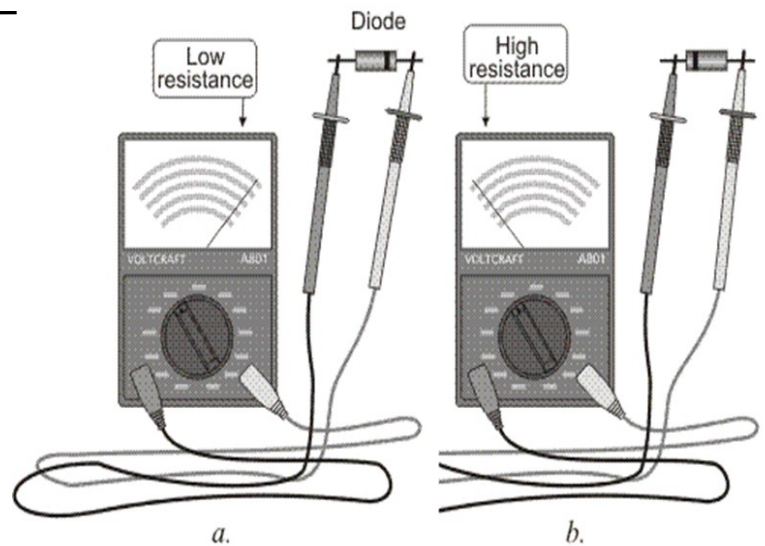
Ok, you should know something about multimeters now. There are two kinds: analog and digital. Analog ones are items of the past, and since they use a needle to tell you values, it can be difficult determining the right value. Digital meters, on the other hand have a display. You should go for this type, although both come in different sizes and with different ranges. Their price is from several dollars, to several hundreds of dollars for really good professional types.

## The Experimenters Bench

### Checking Components

So you've put a circuit together and as far as you know everything appears to be ok, but it doesn't work as expected. Even worse, it refuses to give any signs of life. What do you do? First, check the circuit for mechanical failures, like non-connected wires, broken vias on the board (these are holes on the printed circuit board that have a metal coating down the length of the hole to connect one side of the board to the other), bad battery contacts inside the case, broken pins on a component, cold solder joints, etc.

If this doesn't come up with a result, you should compare values of components with the schematic. You may have put a component in the wrong place, or read values the wrong way. Maybe you forgot k in front of Ohms. Maybe you connected the supply to the wrong pin of an IC. The next step is to test each component on the board.



11.2. Diode testing using an analog instrument

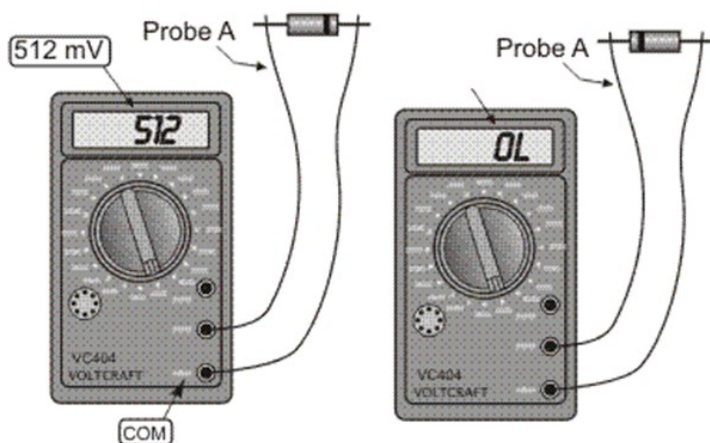
### 11.1 Diodes and Transistors



When using an analog instrument to test a diode, the needle will swing almost fully across the scale when the diode is placed in one direction and hardly move when the diode is reversed. The needle does not measure the resistance of the diode but rather the flow of current in one direction and no current-flow in the other direction.

If the value is equal to or near equal, either low or high in both directions, the diode is faulty, and should be replaced.

Digital instruments have a position on the dial to measure diodes, as shown in 11.1b. When we connect probes to each other, the multimeter should buzz, which signals a short circuit, and display tells 0. When we separate the probes the buzzing stops, and a symbol for open circuit is displayed (this can be either 0L or 1). Now we connect probes to the diode (11.3a). Then we reverse the diode and connect it again (11.3b). If the measured diode was ok, one of the two measurements would have shown a value which represents a minimum voltage that could be conducted through the diode (between 400mV and 800mV), and the anode is the end of the diode which is connected to probe A (red one). The diode is faulty if you hear a buzz (closed circuit) or some value which represents infinity.



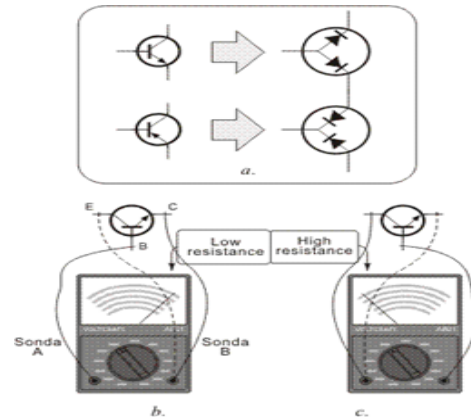
11.3. Diode testing using a digital instrument

Transistors are tested in a similar fashion, since they act as two connected diodes. According to 11.4b, the positive probe is connected to the base, and the negative probe is first connected to the collector and then the emitter. In both cases the resistance should be low. After that, you do the same thing, only with switched probes. The negative probe is connected to the base and you test the collector and emitter with a positive probe.

Both cases should produce a high value on the meter. When testing PNP transistors, all steps are the same, but the measurements should be opposite: on 11.4a they are high, and on 11.4c they are low.

If you test transistors using a digital instrument, the process remains similar to the one with diodes. Each diode should produce a value between 400mV and 800mV. Many modern digital multimeters have a socket for testing transistors. There is, as displayed on 11.5, a special socket where low and medium power transistors fit.

If you need to test high power transistors, thin wires (0.8mm) should be soldered to transistor's pins and then plugged into the socket. As displayed on 11.5, a transistor is plugged into the socket according to its type (PNP or NPN) and the switch with a hFE marking is brought into position. If the transistor works, the display shows a value which represents the current amplification coefficient. If, for example, a transistor is tested, and the display shows 74, this means the collector current is 74 times higher than the base current.



11.4. Transistor test

## 11.2 Transformers and coils

Transformers are tested by measuring the resistance of the copper wire on the primary and secondary. Since the primary has more turns than the secondary, and is wound using a thinner wire, its resistance is higher, and its value is in range of tens of ohms (in high power transformers) to several hundreds of ohms.

Secondary resistance is lower and is in range between several ohms to several tens of ohms, where the principle of inverse relations is still in place, high power means low resistance.

If the multimeter shows an infinite value, it means the coil is either poorly connected or the turns are disconnected at some point.

Coils can be tested in the same way as transformers – through their resistance. All principles remain the same as with transformers. Infinite resistance means an open winding.

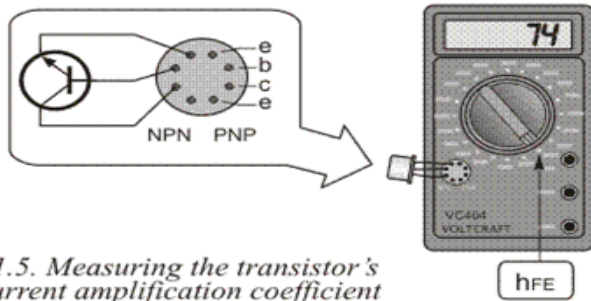
## 11.3 Capacitors

Capacitors should produce an infinite reading on a multimeter. Exceptions are electrolytics and very high value block capacitors. When the positive end of an electrolytic capacitor is connected to the positive probe of an analog instrument, and a negative end to a negative probe, the needle moves slightly and gradually comes back towards infinity. This is proof the capacitor is ok, and the needle's movement is charge being stored in the capacitor. (Even small capacitors get charged while testing.)

Variable capacitors are tested by connecting an ohm-meter to them, and turning the rotor. The needle should point to infinity at all times, because any other value means the plates of the rotor and stator are touching at some point.



There are digital meters that have the ability to measure capacitance, which simplifies the process. With this said, it is worth mentioning that capacitors have considerably wider tolerance than resistors, (about 20%).



11.5. Measuring the transistor's current amplification coefficient

### 11.4 Potentiometers

To test a potentiometer, (pot), or a variable resistor, the process is rather simple – you connect the component to the probes of a meter set to ohms and turn the shaft. (A "noisy" pot can be repaired using a special spray.)

### 11.5 Speakers and headphones

When testing speakers, their voice-coil can be between 1.5 and 32 Ohms. The value marked on the speaker is an impedance value and the actual DC resistance will be lower. When measuring a speaker with an analogue meter, you should hear a click when the probes are connected.

## Early Radio: Military Communications

### CHRISTMAS EVE, DONG HA, VIETNAM 1966

By STEPHEN "RAGS" RAGLE

The young Marine sat in a shallow, wet foxhole with a few sand bags piled in front of it. He was huddled under his poncho. It was raining, as usual, and dark.

"This is the darkest place in the world," he thought to himself. His thoughts tried to drift to something warm and dry but couldn't. He wondered if he would ever dry out again. His boots and socks had been wet for weeks and he could not get them dried out. The rain was incessant. If it wasn't pouring it was drizzling constantly. It was cold.

He sat shivering, thinking, "What happened to that damned heat they had heard so much about?" He had only been in country about three weeks and in Dong Ha about two weeks now, but it was beginning to seem like a lifetime. Just over eleven months and one week to go. That was a lifetime he thought.

They would have a fire in the fireplace at home tonight. It was one of the few nights they did. It was his first Christmas Eve away from home.

The dark. He stared into it trying to get a glimpse of some movement, hoping not to see any because he didn't know how he would react. He was trained for this, but there was still the nagging doubt. It was so dark, it seemed like a nightmare.

He could barely make out the first string of barbed wire about twenty feet in front of him. At least there was no fog tonight.

This country was strange; it either had the darkest dark or the thickest fog he had ever seen. There was absolutely no light at night. No stars, no moon. He hadn't even seen the sun during the daytime.

Funny, he thought, how the senses play tricks or...did they? He had heard all the rumors of how quietly the VC moved through the wire. He was always thinking he heard or saw something. The strain and fear were tremendous at this point, but he would soon find he could live with it or get used to it.

The only exception for light was when they thought they heard or saw something. They would call on the land line and request some light, which was ridiculous. When they called, someone behind them would crank up a diesel powered generator to generate the electricity for the spotlights. With the time it took and all the noise it made, the enemy could easily have disappeared back into the bush.

The other two Marines with him were also new to the country. They were all on perimeter guard duty and had been since their arrival. They knew they were in for a long harrowing night. They knew there should be no intrusions because the sergeant of the guard was as frightened as they were and did not make any rounds, and the North Vietnamese had agreed to a truce. The NVA did not always abide by the rules, but the guard duty had been uneventful up to this point.

The young Marines were still afraid.

The young Marine turned to his two buddies and told them he had a little something to celebrate Christmas Eve with and warm them up. It was a fifth of Japanese whiskey he had bought from the black market. They only had water to chase it with and cold C-rations but they would make do.

They were sitting in the rain, gagging on the rotten whiskey and getting warmer and braver by the minute, when the land-line rang. They figured it was just the sergeant of the guard checking on them. It was the sarge,

but he was announcing the coming of the company commander and gunny. The three Marines scrambled to get rid of the bottle of whiskey and hoped no one smelled the liquor. They figured the rain would probably take care of that.

Soon the Captain and Gunny arrived carrying gifts of Christmas. They had brought the first mail, since they had arrived, and some soft drinks, proclaiming a couple of beers awaited each of them when they got off duty. Each of the Marines had received a package in the mail. They thanked their superiors as they left and began opening their mail. The two other Marines had received cookies and assorted goodies.



## Early Radio: Military Communications

The first Marine, on opening his package, was shocked to find two fifths of Old Fitzgerald bourbon decanters in it. One of his best friends back in the world had come through on Christmas Eve.

They had one hell of a party that night--not too rowdy though--in the small wet hole in the middle of a war zone. They quickly overcame their fears, discussing how they could take on the whole NVA that night and forgot the cold and wet, just hoping for some kind of action.

They were three drunk Marines that night; there was no enemy activity, lucky for them; and they had one hell of a hangover Christmas morning. They had at least a better Christmas Eve than they had envisioned.

### Epilogue

The young Marine, who received the bourbon, probably or subconsciously came to the conclusion that alcohol could help overcome that war and anything else in life. He left Vietnam well on his way to becoming a functional alcoholic.

Twenty-six years later, he was admitted to the hospital with acute alcoholic hepatitis and spend three weeks in ICU fighting for his life again and going through severe alcohol withdrawals. Nine months later, his health still declining, he received a life-saving liver transplant and is now alcohol free. He celebrated his first year anniversary with his new liver in September 1994.

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### TREE IN A TUBE

by J. Thomas Sykes

Best as I can recollect, a handler by the name of Pfau (silent "p") from Kalamazoo, Michigan, received a four-foot long cardboard mailing tube with a three inch diameter tree from his wife a week or so before Christmas of 1968.

Now most packages were of the "regular" size and shape. You know...rectangular, square, etc. So the size and shape of this thing was a bit mystifying.

Pfau opened the package with a crowd of people watching. Out of the end of the tube comes this "thing" sealed in a plastic pouch matching the approximate length and width of the tube. It appeared to be a tree of some kind. Opening the

pouch there was, indeed, a tree inside...a small, almost four-foot balsam pine. It was "squeezed" into the pouch and then into the tube - not unlike how Christmas trees today are squeezed into fine netting for transport.

Pulling away the plastic, the tree limbs started to fall away from the main stem, and the tree took on a more natural shape. But what was most striking about the tree was its intense aroma. Pine. Real honest-to-goodness pine scent. Not something out of a bottle or spray, not one of those dangly little scent thingies you get at the car wash. Real woods aroma.

Sounds a little silly, sending some green, plant-like material to Vietnam. Kinda like sending coals to Newcastle. But it wasn't so much the appearance of the tree as it was that wonderfully intoxicating smell of north-woods pine. Talk about nostalgic.

I think there was also another small package that accompanied the tree - either arrived on the same day or shortly after. It contained Christmas ornaments and a small tree stand.

That tree stood in Pfau's hooch. (He shared his hooch with the Vet Tech, Dowdy.)

That hooch became the most popular hooch for miles. Not only did guys from the unit hang out there - guys from other line units heard about it and would stop in for a whiff.

Whenever we could, many of us would gather around that tiny keepsake from "the world," reflecting on Christmas's past, talking about what it would be like at home this time of year. Talk of snow and cold, Christmas songs...

As I recall, Pfau said a letter from his wife explained that some tree grower in the Kalamazoo area had made trees available, pre-wrapped and packaged, for families in the area to send to their loved ones in Vietnam. All they had to do was pay the postage. Trees were watered down, wrapped and squeezed into the tubes.

What a great idea! Whenever I smell pine, I can still remember that little tree and what it meant to all who experienced it.

\*\*\*\*\*





**FM Simplex Contest****Sunday, February 12th, 2012**

**Time:** 2 m (1:00 PM – 2:00 PM)  
 70 cm (2:00 PM – 2:30 PM)  
 6 m (2:30 PM – 3:00 PM)  
 1.25 m (3:00 PM – 3:30 PM)

**Region:** Southeastern Wisconsin (Grids-EN52, EN53, EN62, EN63) Contacts with other grid squares are also welcomed.

**Bands:** 2 meters, 70 centimeters, 6 meters, 1.25 meters

**Categories:** Base, Mobile, HT, and Club

**Awards:** Certificates given for 1<sup>st</sup> in each category and individual band with 2<sup>nd</sup> and 3<sup>rd</sup> awards based on committee discretion.

Limit one award per person. Winning club is recognized on a plaque at AES Milwaukee.

**Points:** 2 meters-(1 point), 70 centimeters-(2 points), 6 meters (2-points), 1.25 meters-(3 points)

**Special Multiplier:** 1.5 score multiplier for Technician Class participants.

**Bonus Points:** Make a contact with the MRAC station W9RH (any band), and receive a 10 point bonus on your score.

**Special Event Club 95<sup>th</sup> Anniversary:** Make a contact with W9RH and you are eligible for a Club Anniversary QSL Certificate. QSL through the regular club address.

**Log Information Required:** Call sign of station worked, frequency, time, and grid square.

**Next Regular Meeting**

The next meeting will be on Thursday, January 31st at 7:00PM. We meet in the Fellowship Hall of Redemption Lutheran Church, 4057 N Mayfair Road. Use the south entrance. Access the MRAC Yahoo group for important details about the February Meeting.

**Meeting Schedule:****January 31st, 2013****February 28th, 2013****SwapFest: February 16th, 2013****Please do not call the church for information!****Club Nets**

Please check in to our nets on Friday evenings.

Our ten meter SSB net is at **8:00 p.m.** at **28.490 MHz USB** Our two meter FM net follows at **9:00 p.m.** on our repeater at **145.390 MHz** with a minus offset and a **PL of 127.3 Hz.**

Visit our website at: [www.w9rh.org](http://www.w9rh.org)

Or phone **(414) 332-MRAC** or **332 - 6722**



Name of Net, Frequency, Local Time	Net Manager
<b><u>Badger Weather Net (BWN)</u></b> 3984 kHz, 0500	<a href="#">W9IXG</a>
<b><u>Badger Emergency Net (BEN)</u></b> 3985 kHz, 1200	<a href="#">NX9K</a>
<b><u>Wisconsin Side Band Net (WSBN)</u></b> 3985 or 3982.5 kHz, 1700	<a href="#">KB9KEG</a>
<b><u>Wisconsin Novice Net (WNN)</u></b> 3555 kHz, 1800	<a href="#">KB9ROB</a>
<b><u>Wisconsin Slow Speed Net (WSSN)</u></b> 3555 kHz, Sn, T, Th, F, 1830	<a href="#">N1KSN</a>
<b><u>Wisconsin Intrastate Net - Early (WIN-E)</u></b> 3555 kHz, 1900	<a href="#">WB9ICH</a>
<b><u>Wisconsin Intrastate Net - Late (WIN-L)</u></b> 3555 kHz, 2200	<a href="#">W9RTP</a>
<b><u>ARES/RACES Net</u></b> 3967.0 kHz, 0800 Sunday	<a href="#">WB9WKO</a>
* Net Control Operator needed. Contact Net Manager for information.	

**Chatter Deadline**

The **DEADLINE** for items to be published in the **Chatter** is the 15th of each month. If you have anything (announcements, stories, articles, photos, projects) for the 'Chatter, please get it to me before then.

You may contact me or Submit articles and materials by e-mail at: [Kc9cmt@earthlink.net](mailto:Kc9cmt@earthlink.net)

**or by Post to:**

Michael B. Harris

807 Nicholson RD

South Milwaukee, WI 53172-1447



## VE Testing:

January 26th, 2013—AES 9:30 am to 11:30 am.

November 24th, 2012—AES 9:30 am to 11:30 am.

**ALL testing takes place at: Amateur Electronic Supply 5720 W. Good Hope Rd. Milwaukee, WI 53223**

## Area Swapfests

Jan. 5th, 2013 [41st Annual Midwinter Swapfest](#) Location: Waukesha, WI Type: ARRL Hamfest  
Sponsor: West Allis Radio Amateur Club  
Website: <http://www.warac.org>

Jan. 20th, 2013 [WCRA Mid-Winter Hamfest](#) Location: St. Charles, IL Type: ARRL Hamfest  
Sponsor: Wheaton Community Radio Amateurs  
Website: <http://www.w9ccu.org>

February 16th, 2013 [Mid-Winter Interclub SwapFest](#)

Location: Brookfield, WI Type: ARRL Hamfest  
Sponsor: Milwaukee Radio Amateurs Club & Milwaukee Area Amateur Radio Society

Website: <http://www.w9rh.org>

## MRAC Working Committees

### 95th Anniversary:

- Dave—KA9WXN

### Net Committee:

- Open

### Field Day

Dave—KA9WXN, Al—KC9IJJ

### FM Simplex Contest

- Joe – N9UX
- Jeff – K9VS

### Ticket drum and drawing

- Tom – N9UFJ
- Jackie – No Call

### Newsletter Editor

- Michael-KC9CMT

### Webmaster

- Mark Tellier—AB9CD

### Refreshments

- Hal—KB9OZN



## Membership Information

The Hamateur Chatter is the newsletter of MRAC (Milwaukee Radio Amateurs' Club), a not for profit organization for the advancement of amateur radio and the maintenance of fraternalism and a high standard of conduct. MRAC Membership dues are \$17.00 per year and run on a calendar year starting January 1st. MRAC general membership meetings are normally held at 7:00PM the last Thursday of the month except for November when Thanksgiving falls on the last Thursday when the meeting moves forward 1 week to the 3rd Thursday and December, when the Christmas dinner takes the place of a regular meeting. Club Contact Information

Our website address <http://www.w9rh.org>

Telephone (414) 332-MRAC (6722)

Address correspondence to:

**MRAC, Box 240545, Milwaukee, WI 53223**

Email may be sent to: [w9rh@arrl.net](mailto:w9rh@arrl.net) . Our YAHOO newsgroup:

<http://groups.yahoo.com/group/MRAC-W9RH/>

## CLUB NETS:

- The Six Meter SSB net is Thursday at 8:00PM on 50.160 MHz USB
- Our Ten Meter SSB net is Friday at 8:00PM on 28.490 MHz ± 5 KHz USB.
- Our Two Meter FM net follows the Ten meter net at 9:00PM on our repeater at 145.390MHz - offset (PL 127.3)



The HamChatter is a monthly publication of the Milwaukee Radio Amateurs' Club.

Serving Amateur Radio for Southeastern Wisconsin & Milwaukee County Club Call sign – W9RH

MRAC Website: <http://www.W9RH.org>

Editor: Michael B. Harris, Kc9cmt, [kc9cmt@Earthlink.net](mailto:kc9cmt@Earthlink.net)



## Milwaukee Area Nets

Mon.8:00 PM 3.994 Tech Net

Mon.8:00 PM 146.865- ARES Walworth ARRL News Line

Mon.8:00 PM 146.445 Emergency Net

Mon.8:00 PM 146.865- ARES Net Walworth

Mon.8:45 PM 147.165- ARRL Audio News

Mon. 9:15 PM 444.125+ Waukesha ARES Net

Mon.9:00 PM 147.165- Milwaukee County ARES Net

**Tue.9:00 AM 50.160 6 . Mtr 2nd Shifter's Net**

Tue. 7:00 PM 145.130 MAARS Trivia Net

Tue. 8:00 PM 7.035 A.F.A.R. (CW)

Wed. 8:00 PM 145.130 MAARS Amateur Radio Newsline

Wed. 9:00 PM 145.130 MAARS IRLP SwapNet d FM-38 Repeaters (IRLP 9624)

Thur. 8:00 PM 50.160, 6 Mtr SSB Net

Thur. 9:00 PM 146.910 Computer Net

**Fri. 8:00 PM 28.490 MRAC W9RH 10 Mtr Net SSB**

**Fri. 9:00 PM 145.390 W9RH 2 Mtr. FM Net**

Sat. 9:00 PM 146.910 Saturday Night Fun Net

Sun 8:30 AM 3.985 QCWA (Chapter. 55) SSB Net

Sun 9:00 AM 145.565 X-Country Simplex Group

Sun 8:00 PM 146.91 Information Net

Sun 8:00 PM 28.365 10/10 International Net (SSB)

Sun 9:00 PM 146.91 Swap Net

